SEQUENCE LISTING

<110> MIYAWAKI, ATSUSHI
TSUTSUI, HIDEKAZU
KARASAWA, SATOSHI

<120> FLUORESCENT PROTEIN

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<140> 10/561,040
<141> 2005-12-16

<150> PCT/JP04/08790
<151> 2004-06-16

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<170> PatentIn Ver. 3.3

<210> 1
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<400> 1

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Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
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Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe Asp Tyr Gly
     50                  55                  60

Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                 85                  90                  95

Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
    130                 135                 140

Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145                 150                 155                 160

Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
                165                 170                 175
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Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

Phe Val Asp His Arg Ile Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
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Leu Ala Lys
225
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<210> 2
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<220>
<221> CDS
<222> (1)..(681)

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Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Leu Met Glu Gly
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gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag   96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
             20                  25                  30

cct ttc gag gga ata cag aat atg gac ctg aca gtc ata gag ggc gga   144
Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

cct ctt cct ttt gct ttc gat atc ctg aca aca gta ttc gat tac ggc   192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe Asp Tyr Gly
     50                  55                  60

aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag   240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa   288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                 85                  90                  95

gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac   336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt   384
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca   432
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
    130                 135                 140

tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt   480
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Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145                 150                 155                 160

aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc   528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
                165                 170                 175

aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac   576
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

ttc gtg gat cat cga att gag ata aca agc cat gac aag gat tac aac   624
Phe Val Asp His Arg Ile Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg   672
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
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ctg gcc aag taa                                                  684
Leu Ala Lys
225
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<210> 3
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<220>
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<222> (21)
<223> a, c, g, t, unknown or other

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<210> 4
<211> 27
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<213> Artificial Sequence

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aactggaaga attcgcggcc gcaggaa 27

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<210> 6
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<221> modified_base
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<220>
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<210> 9
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<220>
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<213> Artificial Sequence

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<210> 11
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<212> DNA
<213> Artificial Sequence

<220>
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<212> PRT
<213> Favia favus

<400> 12

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			20					25				30			
Pro	Phe	Glu	Gly	Ile	Gln	Asn	Met	Asp	Leu	Thr	Val	Ile	Glu	Gly	Gly
		35					40					45			
Pro	Leu	Pro	Phe	Ala	Phe	Asp	Ile	Leu	Thr	Thr	Val	Phe	His	Tyr	Gly
	50					55					60				
Asn	Arg	Val	Phe	Val	Lys	Tyr	Pro	Glu	Glu	Ile	Val	Asp	Tyr	Phe	Lys
65					70					75					80
Gln	Ser	Phe	Pro	Glu	Gly	Tyr	Ser	Trp	Glu	Arg	Ser	Met	Ser	Tyr	Glu
				85					90					95	
Asp	Gly	Gly	Ile	Cys	Leu	Ala	Thr	Asn	Asn	Ile	Thr	Met	Lys	Lys	Asp
			100					105					110		
Gly	Ser	Asn	Cys	Phe	Val	Tyr	Glu	Ile	Arg	Phe	Asp	Gly	Val	Asn	Phe
		115					120					125			
Pro	Ala	Asn	Gly	Pro	Val	Met	Gln	Arg	Lys	Thr	Val	Lys	Trp	Glu	Pro
	130					135					140				
Ser	Thr	Glu	Lys	Met	Tyr	Val	Arg	Asp	Gly	Val	Leu	Lys	Gly	Asp	Val
145					150					155					160
Asn	Met	Ala	Leu	Leu	Leu	Gln	Gly	Gly	Gly	His	Tyr	Arg	Cys	Asp	Phe
				165					170					175	

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Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

Phe Val Asp His Arg Ile Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
    210                 215                 220

Leu Ala Lys
225
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<210> 13
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Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly
  1               5                  10                  15

gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag   96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
             20                  25                  30

cct ttc gag gga ata cag aat atg gac ctg aca gtc ata gag ggc gga  144
Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

cct ctt cct ttt gct ttc gat atc ctg aca aca gta ttc cat tac ggc  192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe His Tyr Gly
     50                  55                  60

aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag  240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa  288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                 85                  90                  95

gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac  336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt  384
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca  432
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
    130                 135                 140

tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt  480
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```
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145                 150                 155                 160

aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc   528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
                165                 170                 175

aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac   576
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

ttc gtg gat cat cga att gag ata aca agc cat gac aag gat tac aac   624
Phe Val Asp His Arg Ile Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg   672
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
    210                 215                 220

ctg gcc aag taa                                                  684
Leu Ala Lys
225
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<210> 14
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<212> PRT
<213> Favia favus

<400> 14

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             20                  25                  30

Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe His Tyr Gly
     50                  55                  60

Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                 85                  90                  95

Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
    130                 135                 140

Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145                 150                 155                 160

Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
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```
                  165                 170                 175

Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

Phe Val Asp His Arg Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
    210                 215                 220

Leu Ala Lys
225
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<210> 15
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Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly
  1               5                  10                  15

gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag   96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
             20                  25                  30

cct ttc gag gga ata cag aat gtg gac ctg aca gtc ata gag ggc gga  144
Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

cct ctt cct ttt gct ttc gat atc ctg aca aca gta ttc cat tac ggc  192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe His Tyr Gly
     50                  55                  60

aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag  240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa  288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                 85                  90                  95

gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac  336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt  384
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca  432
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
    130                 135                 140
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```
tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt   480
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145                 150                 155                 160

aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc   528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
                165                 170                 175

aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac   576
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

ttc gtg gat cat cga atg gag ata aca agc cat gac aag gat tac aac   624
Phe Val Asp His Arg Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg   672
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
    210                 215                 220

ctg gcc aag taa                                                  684
Leu Ala Lys
225
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<210> 16
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<213> Favia favus

<400> 16

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Met Ser Val Ile Thr Ser Glu Met Lys Ile Glu Val Arg Met Glu Gly
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             20                  25                  30

Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly
     50                  55                  60

Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                 85                  90                  95

Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Ser
    130                 135                 140

Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145                 150                 155                 160
```

```
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
                165                 170                 175

Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

Phe Val Asp His Leu Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
    210                 215                 220

Leu Ala Lys
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<210> 17
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gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag   96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
             20                  25                  30

cct ttc gag gga ata cag aat gtg gac ctg aca gtc ata gag ggc gga  144
Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

cct ctt cct ttt gct ttc gat atc ctg aca aca gca ttc cat tac ggc  192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly
     50                  55                  60

aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag  240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa  288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                 85                  90                  95

gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac  336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

ggc agc aac tgt ttt gtc aat gaa att cga ttt gat ggt gtg aac ttt  384
Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag tca  432
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Ser
    130                 135                 140
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```
tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt   480
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145                 150                 155                 160

aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc   528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
                165                 170                 175

aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac   576
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

ttc gtg gat cat cta atg gag ata aca agc cat gac aag gat tac aac   624
Phe Val Asp His Leu Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg   672
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
    210                 215                 220

ctg gcc aag taa                                                  684
Leu Ala Lys
225
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<210> 18
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<212> PRT
<213> Favia favus

<400> 18

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Met Ser Val Ile Thr Ser Glu Met Lys Ile Glu Leu Arg Met Glu Gly
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Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
             20                  25                  30

Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly
     50                  55                  60

Asn Arg Val Phe Val Glu Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                85                  90                  95

Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
    130                 135                 140

Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145                 150                 155                 160
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```
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
                165                 170                 175

Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

Phe Val Asp His Gln Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
    210                 215                 220

Leu Ala Lys
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<210> 19
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<220>
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<222> (1)..(681)

<400> 19

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Met Ser Val Ile Thr Ser Glu Met Lys Ile Glu Leu Arg Met Glu Gly
  1               5                  10                  15

gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag   96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
             20                  25                  30

cct ttc gag gga ata cag aat gtg gac ctg aca gtc ata gag ggc gga  144
Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

cct ctt cct ttt gct ttc gat atc ctg aca aca gca ttc cat tac ggc  192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly
     50                  55                  60

aac cgg gta ttt gtc gaa tac cca gaa gaa ata gta gac tac ttc aag  240
Asn Arg Val Phe Val Glu Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa  288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                 85                  90                  95

gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac  336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

ggc agc aac tgt ttt gtc aat gaa att cga ttt gat ggt gtg aac ttt  384
Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca  432
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
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```
    130                 135                 140

tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gta   480
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145                 150                 155                 160

aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc   528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
                165                 170                 175

aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac   576
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

ttc gtg gat cat caa atg gag ata aca agc cat gac aag gat tac aac   624
Phe Val Asp His Gln Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg   672
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
    210                 215                 220

ctg gcc aag taa                                                  684
Leu Ala Lys
225
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<210> 20
<211> 227
<212> PRT
<213> Favia favus

<400> 20

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Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly
  1               5                  10                  15

Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
             20                  25                  30

Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe Gly His Gly
     50                  55                  60

Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                 85                  90                  95

Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
    130                 135                 140

Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
```

```
145                 150                 155                 160

Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
                165                 170                 175

Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

Phe Val Asp Leu Arg Thr Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
    210                 215                 220

Leu Ala Lys
225
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<210> 21
<211> 684
<212> DNA
<213> Favia favus

<220>
<221> CDS
<222> (1)..(681)

<400> 21

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atg agt gtg att aca tca gaa atg aag atg gag ctg cgt atg gaa ggc   48
Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly
  1               5                  10                  15

gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag   96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
             20                  25                  30

cct ttc gag gga ata cag aat atg gac ctg aca gtc ata gag ggc gga   144
Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly
         35                  40                  45

cct ctt cct ttt gct ttc gat atc ctg aca aca gca ttc ggt cac ggc   192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe Gly His Gly
     50                  55                  60

aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag   240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65                  70                  75                  80

cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa   288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
                 85                  90                  95

gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac   336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
            100                 105                 110

ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt   384
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
        115                 120                 125

cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca   432
```

```
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
    130                 135                 140

tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt   480
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145                 150                 155                 160

aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc   528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
                165                 170                 175

aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac   576
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
            180                 185                 190

ttc gtg gat ctt cga act gag ata aca agc cat gac aag gat tac aac   624
Phe Val Asp Leu Arg Thr Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
        195                 200                 205

aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg   672
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
    210                 215                 220

ctg gcc aag taa                                                  684
Leu Ala Lys
225
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<210> 22
<211> 225
<212> PRT
<213> Discosoma sp.

<400> 22

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Met Arg Ser Ser Lys Asn Val Ile Lys Glu Phe Met Arg Phe Lys Val
  1               5                  10                  15

Arg Met Glu Gly Thr Val Asn Gly His Glu Phe Glu Ile Glu Gly Glu
             20                  25                  30

Gly Glu Gly Arg Pro Tyr Glu Gly His Asn Thr Val Lys Leu Lys Val
         35                  40                  45

Thr Lys Gly Gly Pro Leu Pro Phe Ala Trp Asp Ile Leu Ser Pro Gln
     50                  55                  60

Phe Gln Tyr Gly Ser Lys Val Tyr Val Lys His Pro Ala Asp Ile Pro
 65                  70                  75                  80

Asp Tyr Lys Lys Leu Ser Phe Pro Glu Gly Phe Lys Trp Glu Arg Val
                 85                  90                  95

Met Asn Phe Glu Asp Gly Gly Val Val Thr Val Thr Gln Asp Ser Ser
            100                 105                 110

Leu Gln Asp Gly Cys Phe Ile Tyr Lys Val Lys Phe Ile Gly Val Asn
        115                 120                 125

Phe Pro Ser Asp Gly Pro Val Met Gln Lys Lys Thr Met Gly Trp Glu
    130                 135                 140
```

```
Ala Ser Thr Glu Arg Leu Tyr Pro Arg Asp Gly Val Leu Lys Gly Glu
145                 150                 155                 160

Ile His Lys Ala Leu Lys Leu Lys Asp Gly Gly His Tyr Leu Val Glu
                165                 170                 175

Phe Lys Ser Ile Tyr Met Ala Lys Lys Pro Val Gln Leu Pro Gly Tyr
            180                 185                 190

Tyr Tyr Val Asp Ser Lys Leu Asp Ile Thr Ser His Asn Glu Asp Tyr
        195                 200                 205

Thr Ile Val Glu Gln Tyr Glu Arg Thr Glu Gly Arg His His Leu Phe
    210                 215                 220

Leu
225
```

<210> 23
<211> 225
<212> PRT
<213> Trachyphyllia geoffroyi

<400> 23

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Met Ser Leu Ile Lys Pro Glu Met Lys Ile Lys Leu Leu Met Glu Gly
  1               5                  10                  15

Asn Val Asn Gly His Gln Phe Val Ile Glu Gly Asp Gly Lys Gly His
             20                  25                  30

Pro Phe Glu Gly Lys Gln Ser Met Asp Leu Val Val Lys Glu Gly Ala
         35                  40                  45

Pro Leu Pro Phe Ala Tyr Asp Ile Leu Thr Thr Ala Phe His Tyr Gly
     50                  55                  60

Asn Arg Val Phe Ala Lys Tyr Pro Asp His Ile Pro Asp Tyr Phe Lys
 65                  70                  75                  80

Gln Ser Phe Pro Lys Gly Phe Ser Trp Glu Arg Ser Leu Met Phe Glu
                85                  90                  95

Asp Gly Gly Val Cys Ile Ala Thr Asn Asp Ile Thr Leu Lys Gly Asp
            100                 105                 110

Thr Phe Phe Asn Lys Val Arg Phe Asp Gly Val Asn Phe Pro Pro Asn
        115                 120                 125

Gly Pro Val Met Gln Lys Lys Thr Leu Lys Trp Glu Ala Ser Thr Glu
    130                 135                 140

Lys Met Tyr Leu Arg Asp Gly Val Leu Thr Gly Asp Ile Thr Met Ala
145                 150                 155                 160

Leu Leu Leu Lys Gly Asp Val His Tyr Arg Cys Asp Phe Arg Thr Thr
                165                 170                 175

Tyr Lys Ser Arg Gln Glu Gly Val Lys Leu Pro Gly Tyr His Phe Val
            180                 185                 190
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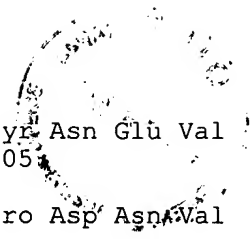

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Asp His Cys Ile Ser Ile Leu Arg His Asp Lys Asp Tyr Asn Glu Val
        195                 200                 205

Lys Leu Tyr Glu His Ala Val Ala His Ser Gly Leu Pro Asp Asn Val
    210                 215                 220

Lys
225
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